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# MOOCS for Lifelong Learning, Equity, and Liberation

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## Abstract

Quality education for all is both a human right based on social justice and liberation and a force for sustainable development and peace. The goal of education for all is stated in United Nations UNESCO Sustainability Goal 4, 2030 Agenda, which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. This chapter is based on a systematic literature review. In this chapter, the focus is on global initiatives in education as a global common. The findings support that knowledge is a universal entity constructed by individuals, and it belongs to anyone anywhere and at any time. The year 2012 was dubbed the Year of the MOOC, but because of the COVID-19 pandemic, 2020 marked another milestone. MOOCs have dramatically changed the way people learn, and how to access knowledge. MOOCs offer an affordable, flexible way to learn new skills, advance a career, and deliver quality educational experiences. MOOCs have the potential to help individuals enjoy learning and acquire knowledge in a variety of ways. In the changing learning landscapes and the futures of learning, MOOCs can play a variety of roles, such as stand-alone courses in informal and non-formal learning and modules integrated into formal education. It is time to develop and offer more agile, seamless, rhizomatic learning opportunities that promote human rights equity and liberation.

**Keywords:** equity, human rights, liberation, lifelong learning, MOOC, OER, open educational resources, open learning, open movement, self-determined learning, social justice

## 1. Introduction

Education is both a human right and a force for sustainable development and peace [1]. Every goal of the 2030 Agenda requires education to equip people with the knowledge, skills, and values they need to live with dignity, build their lives, and contribute to their societies [1–4].

The novel coronavirus disease (COVID-19) is the most significant public health emergency in the 21st century to date. In higher education institutions, teaching practices have been profoundly disrupted by the closure of their physical campuses, and the crisis has highlighted the urgent need for policymakers and institutional leaders to adapt their educational and policy models accordingly [5]. The ongoing pandemic has thus increased the interest in online education, as many educational institutions, such as schools and campuses, as well as societies, in most countries around the world have been on lockdown since March 2020. Consequently, the

largest massive open online course (MOOC) providers have experienced dramatic growth since the onset of the pandemic [6, 7].

The year 2012 was coined the year of the MOOC [8]. However, 2020 marked another milestone for MOOCs because of the COVID-19 pandemic. Millions of people around the world are now using MOOCs to learn for a variety of reasons, such as professional development, career transition, college preparation, supplemental learning, lifelong learning, and corporate e-learning and training.

MOOCs are free online courses in which anyone can enroll. MOOCs offer an affordable and flexible way to learn new skills, advance careers, and deliver quality educational experiences at scale. MOOCs have dramatically changed the way the world learns. According to Mooc.org [6], traditional classrooms can only serve a limited number of students, but millions of people around the world want—and need—a quality education.

The United Nations Educational Science and Cultural Organization (UNESCO) considers that open education and the open movement, such as Open Educational Resources (OER), MOOCs, Open Science, and Open Access, are the most efficient ways to achieve the United Nations UNESCO Sustainability Goals (SDG), particularly SDG4 on education, as well as to promote resilience and sustainability in quality education for all, equity, lifelong learning, and well-being [9]. The use of the term “global commons” underscores the universality of education and the collective global responsibility for education. Education, particularly open education, is a global common goal in achieving equity, social justice, and human rights. Another initiative of UNESCO, which goes beyond the SDGs and aims at empowering individuals to achieve their personal goals, is the global initiative Futures of Education: Learning to Become [2]. This initiative serves as a catalyst for reimagining how knowledge and learning can shape the future of humanity and the planet. The most coherent means of giving shape to this vision of regenerative education is through the principle of education as a global common, which was initially outlined in the 2015 UNESCO report Rethinking Education [10]. In this context, education, knowledge, and their importance for a prosperous future are among the most important global commons, which include water, the atmosphere, and biodiversity.

In this chapter, the focus is on global initiatives in education as a global common. MOOCs are highlighted in relation to the goal of achieving human rights, equality, lifelong learning, liberation, and social justice. Issues of quality are also addressed in this context.

## 2. Method

This chapter was conducted as part of a systematic review of the literature, including official reports. The purpose of a literature review is to provide an overview of the current state of knowledge in a defined area. Previous research is analyzed to determine what is known from the past, and any inadequacies or gaps in knowledge are [11–13]. The review is conducted systematically using a structured approach to examine each document’s process of information gathering, evaluating, and data analysis.

In addition, the chapter is based on the mixed methods approach [11–13], and moreover the chapter is based on the author’s own research, experience, and perspectives in a period of almost 20 years. The author has selected examples from the ongoing discourse and debate on the challenges and opportunities of MOOCs in lifelong learning and the future of education, mainly based on official sources, such as the Commonwealth of Learning (COL), the European Commission (EC), UNESCO, the Organization for Economic Cooperation and Development (OECD), and the World

Economic Forum (WEF). In addition, research and information from the largest and most well-known MOOC providers were used as sources. However, these sources do not always represent the official view.

2.1 Issues, controversies, and problems

This chapter does not claim to provide a comprehensive overview of international developments on MOOCs in the field and in the world. Instead, it highlights key international developments. The chapter focuses on the challenges and opportunities related to MOOCs regarding lifelong learning, equity, and liberation.

3. Results

In this section, MOOCs are described according to typology, definitions, and numbers. The largest MOOCs providers are then reviewed. The initiatives by the largest global organizations on open education and lifelong learning and the case for education as a human right, equity and liberation are reviewed. The chapter ends with a discussion of the findings, a conclusion based on them, and recommendations for further research.

3.1 Massive open online courses

Massive open online courses (MOOC) are free online courses in which anyone can enroll. MOOCs offer an affordable and flexible way to learn new skills, advance careers, and deliver high-quality educational experiences at scale [6, 7].

In response to an open online course designed and led by George Siemens at Athabasca University and Stephen Downes at the National Research Council, Dave Cormier at the University of Prince Edward Island and Bryan Alexander at the National Institute for Technology in Liberal Education coined the term MOOC in 2008 [14]. Downes [14, 15] later argued that every letter in the abbreviation MOOC could be negotiated (**Figure 1**), and the concept has evolved over time.

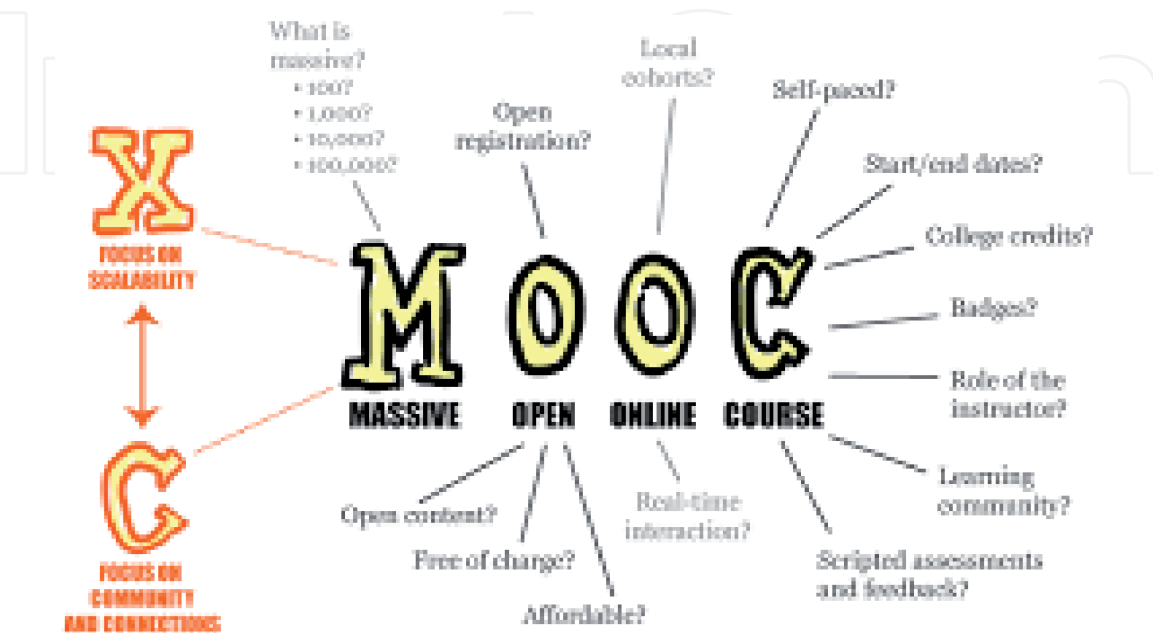


Figure 1.  
MOOC (see [14, 15], Mathieu Plourde (Mathplourde on Flickr)).

The first successful MOOC was Sebastian Thrun and Peter Norvig's course, "Artificial Intelligence," at Stanford University in the fall of 2011. More than 160,000 people around the world enrolled to learn together, which was the first time in history that a course had attracted so many participants [6].

MOOCs have dramatically changed the way the world learns. According to Mooc.org [6] traditional classrooms can only serve a limited number of students, but millions of people around the world want—and need—a quality education.

### 3.2 MOOCs, typology, and definitions: cMOOC and xMOOC

The phenomenon of MOOCs stems from connectivism theory. Siemens [16] defined connectivism as a theory of learning that describes the process of learning through the establishment of online connections between people. While each MOOC has a unique structure and style, MOOCs in general can be divided into two categories: cMOOCs and xMOOCs. According to George Siemens [17].

*...cMOOCs focus on the creation and generation of knowledge, while xMOOCs focus on the duplication of knowledge.*

The original MOOC was a cMOOC. The terms "cMOOC" and "xMOOC" were coined by Stephen Downes, the co-creator of the first cMOOC that was published on the Internet. Launched in 2008, the course was called "Connectivism and Connective Knowledge" (CCK08) and attracted 2,200 enrolled participants. cMOOCs are based on the learning theory of connectivism. Connectivism was first introduced in a blog post in 2004, which was later published in an article by Siemens (16). It was later extended in two publications in 2005: Siemens' Connectivism: Learning as Network Creation and Downes' An Introduction to Connective Knowledge [15, 18].

The theory of connectivism emphasizes the power of networking with other individuals, gathering diverse opinions, and focusing on end goals as the basis of learning. Connectivism is a learning theory aimed at understanding learning in the digital age. Connectivism explains how Internet technologies have created new ways for people to learn and share information over the World Wide Web and with each other. It emphasizes how Internet technologies, such as web browsers, search engines, email, wikis, social networks, online discussion forums, YouTube, and any other tool that allows users to learn and share information with other people, have contributed to new ways of learning. Technologies have enabled people to learn and share information on the World Wide Web and with each other in ways that were not possible before the digital age [15, 18]. Learning occurs not only within an individual, but also within and across networks. A key feature of connectivism is that much of the learning can take place through peer networks that occur online. In connectivism learning, a teacher guides students to information and answers important questions when they arise to help students learn and share independently. Students are also encouraged to search for information online and express what they find. A networked community often develops around such shared information.

Connectivism is based on the idea that learning occurs in networks [14, 16] and that some networks can "support [learners'] agency and cognition" [15, p. 117]. Furthermore, "knowledge is distributed across a network of connections, and therefore learning consists of the ability to construct and traverse these networks" [15]. According to Siemens [16, n.p.], the principles of connectivism include the following:



- *Learning and knowledge rests in diversity of opinions.*
- *Learning is a process of connecting specialized nodes or information sources.*
- *Learning may reside in non-human appliances.*
- *Capacity to know more is more critical than what is currently known.*
- *Nurturing and maintaining connections is needed to facilitate continual learning.*
- *Ability to see connections between fields, ideas, and concepts is a core skill.*
- *Currency (accurate, up-to-date knowledge) is the intent of all connectivism learning activities.*
- *Decision-making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision.*

Connectivism views learning as a process of creating connections and expanding or increasing network complexity. Connections can have different directions and strengths [19]. Siemens, argued that cMOOCs are:

*... based on the idea that learning takes place in a network where learners use digital platforms such as blogs, wikis, and social media platforms to make connections with content, learning communities, and other learners to create and construct knowledge. [17, n.p.].*

A connective MOOC (i.e., cMOOC) is open to anyone. Courses are online for a specific period and according to a specific syllabus. The web with its open systems and software is used to facilitate learning, but also to share information and knowledge. Participants in a cMOOC are responsible for what they learn and what and how they share it. As the course progresses, the networking among the learners helps to shape and form the course content in a rhizome-like and agile manner as it moves along. The teacher serves only as a facilitator.

In a cMOOC, participants take on many roles, both as learners, teachers, and facilitators. All are responsible as peer learners, sharing information and engaging in collaborative experiences and discussions. Haber [8] argues that cMOOC reflects the open vision of the web itself, namely that content continuously is generated by the online community and shared with others in an open manner.

Some top universities, such as Harvard, MIT, and Stanford, have begun offering MOOCs in a slightly different format called xMOOC (extended MOOCs). xMOOCs are built around professors and are more oriented toward a traditional classroom structure, rather than the structure as an open online community of learners based on connectivism theory. xMOOCs mostly mirror classroom instruction by combining a pre-recorded video lecture with quizzes, tests, or other assessments. The xMOOCs landscape is expanding daily and now covers an increasing number of topics in all disciplines. The largest providers today are Coursera [20], edX [21], FutureLearn [22], SWAYAM [23], Udacity [24], and ClassPert (a free search engine for online courses).

Although cMOOCs and xMOOCs share the common goal of providing open and free (or relatively low-cost) education to the public, they have distinctly different

modalities, structures, and qualities. The learning environment set up for each of the MOOC forms is suitable for different learners and different methods of knowledge acquisition.

3.3 MOOCs statistics

In the years before 2020, the growth of MOOC providers had stagnated, garnering a similar number of learners each year. However, in 2020, providers collectively gained over 60 million new learners. Coursera alone accounted for half that number, gaining almost as many users in one year as its closest competitor edX had garnered since it was founded. By the end of 2020, 16.3 million MOOCs had been announced or launched by some 950 universities worldwide. Around 2.8 million courses were added in 2020 alone (Figure 2) [7].

Boosted by the pandemic, MOOCs garnered 180 million learners in their ninth year (Figure 3) [21].

One-third of learners who had ever registered on a MOOC platform did so in 2020. The pandemic brought many people into online education. MOOC providers

Courses

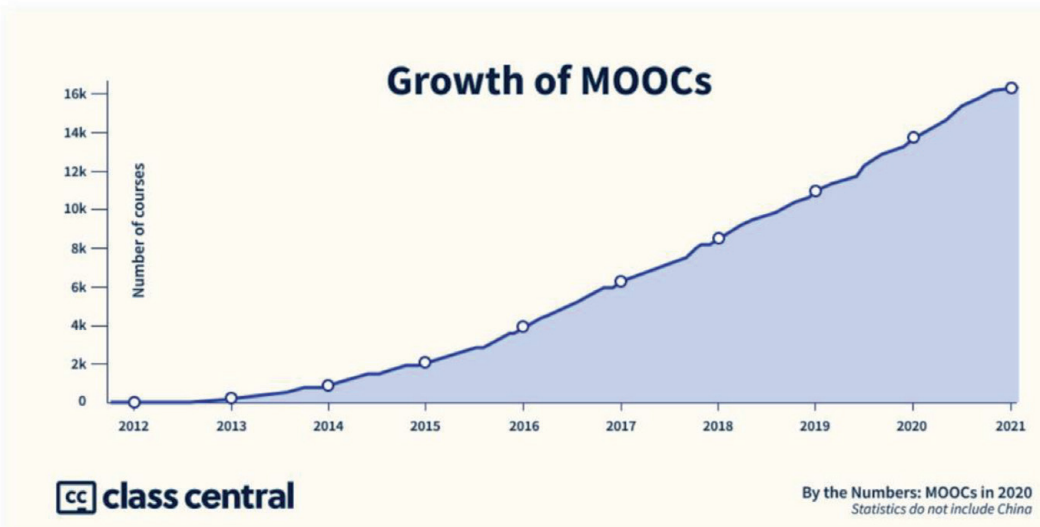


Figure 2.  
Growth in MOOCs (see [21]).



Figure 3.  
MOOCs according to number (see [7]).

	Learners	Courses	Microcredentials	Degrees
<a href="#">Coursera</a>	76 million	4,600 <sup>3</sup>	610	25
<a href="#">edX</a>	35 million	3,100	385	13
<a href="#">FutureLearn</a> <sup>2,4</sup>	14 million	1,160	86	28
<a href="#">Swayam</a> <sup>2</sup>	16 million	1,130	0	0

**Figure 4.**  
*The largest MOOC providers in numbers (see [7]).*

benefited immensely by attracting many learners to register in free online courses from top universities. Class Central was no exception. Of all people who had used Class Central, 40% did so for the first time in 2020. Now in its ninth year, the modern MOOC movement has surpassed 180 million learners, excluding China. In 2020, providers launched over 2,800 courses, 19 online degrees, and 360 micro-credentials. **Figure 4** shows the top MOOC providers in terms of users and offerings.

### 3.4 The largest MOOC providers

Currently, the largest MOOC providers are Coursera [20], edX [21], FutureLearn [22], and SWAYAM [23], and Udacity [24], which are described in brief in alphabetic order in the following subsections.

#### 3.4.1 Coursera

Based on a vision to create life-changing learning experiences for learners around the world, Daphne Koller and Andrew Ng founded Coursera in 2012. In partnership with the world’s leading universities and companies, Coursera provides access to high-quality online courses and degrees for anyone, anywhere, to bring the best learning opportunities to every corner of the world. Today, Coursera partners with more than 200 leading universities and companies. More than 82 million learners, over 100 Fortune 500 companies, and more than 6,000 colleges, businesses, and governments use Coursera to access world-class learning. In February 2021, Coursera received B-Corp certification, so they not only have a legal obligation to their shareholders, but also positively impact the broader community as they continue their efforts to lower the barriers to world-class education for all. Anytime, anywhere. Coursera’s most important core belief is that learning is the source of human progress, and that learning is considered a human right. They believe that education and knowledge have the power to change the world by transforming disease into health, poverty into prosperity, and conflict into peace. They also argue that education has the power to transform lives, families, communities, and societies. Regardless of who the learners are and where they live, learning empowers everyone to change and grow and redefine what is possible. That’s why access to the best learning is a right, not a privilege - it’s Coursera’s mission. Everyone everywhere has the power to change their lives through learning [20].



### 3.4.2 edX

The story of edX began as an experiment and expanded to a global movement [21]. Spearheaded by edX, the concept began as a way for organizations to offer free online courses to millions of students around the world. While the Internet enabled innovation on a massive scale across a wide range of industries, higher education reached only a tiny fraction of the world's curious minds. One afternoon in a lab at Massachusetts Institute of Technology (MIT), Professor Anant Agarwal and his colleagues at MIT and Harvard outlined a far-reaching experiment: a platform that would offer their courses online and freely available to anyone who wanted to take the challenge. In February 2012, Professor Agarwal's course at MIT, Circuits and Electronics, was launched, and edX.org was born (edX, 2021). By opening the classroom through MOOCs, edX brings the best courses from the best schools to millions of learners around the world. The edX platform is designed to enable educators to deliver education at a scale that is equal to or better than on-site learning.

MOOC providers have changed education in many ways and continue to do so. edX, for example, has developed innovative modular degrees - MicroMasters® programs and Professional Certificate, which provide flexible and affordable educational opportunities that learners at all levels can use to succeed in an increasingly complex and technologically advanced world, in addition to their full online master's degrees.

In connection with its MicroMasters™ program, other educational programs, and related services, edX regularly works with many types of organizations from around the world: academic institutions (e.g., major research universities, technical colleges, and liberal arts colleges), nonprofit organizations, national governments, nongovernmental organizations (NGOs), and multinational corporations.

An institution that strongly aligns with edX's mission and offers the opportunity to contribute strategically, content-wise, and/or financially to the consortium is very welcome to collaborate with edX and discuss where it is today and where it wants to go with online/blended learning and MOOCs. In return, edX provides a range of technical, marketing, and educational services (e.g., training, onboarding, high-level program management, learner technical assistance, course strategy, design, build, delivery, and repeat consultations that include data analytics, etc.) to its members who participate in the MicroMasters program and other educational programs. edX offers the highest quality online courses from institutions that share the commitment to excellence in teaching and learning. More than 34 million learners worldwide are enrolled in 100 million enrollments in 2,800 edX courses in subjects such as the humanities, math, and computer science [21].

In 2012, edX realized that it was time for a seismic shift in education from the tried and true to the new and from "for some" to "for all." By opening up the classroom through online learning, edX has empowered millions of learners to unlock their potential and become changemakers [21].

edX offers opportunities to learn from more than 160 member universities. It has made three commitments to the world. From the beginning, they have stayed true to these commitments:

- Increase access to quality education for everyone everywhere.
- Improve teaching and learning on campus and online.
- Advance teaching and learning through research.

**Figure 5** shows the statistics for edX in 2020.



**Figure 5.**  
*EdX statistics in 2020 (see [21]).*

### 3.4.3 FutureLearn

FutureLearn is a private company jointly owned by the Open University United Kingdom and the SEEK Group [22]. The Open University has over 50 years of experience in distance learning and online education. SEEK is a diverse group of companies with the common goal of helping people lead more fulfilling and productive work lives and helping organizations succeed.

FutureLearn launched its first courses in September 2013. Since then, millions of people have registered in its courses. FutureLearn offers a wide range of courses from leading universities and cultural institutions around the world. Courses are delivered step-by-step, and they are accessible via mobile devices, tablets, and desktops, which allows students to integrate learning into their lives [22].

FutureLearn works with several internationally renowned organizations of professional associations, such as the Association of Chartered Certified Accountants (ACCA) and the Institution of Engineering and Technology (IET), businesses such as the BBC and Marks & Spencer, and the UK Government. With over hundreds of partners around the world, including many of the best UK and international universities as well as institutions with vast archives of cultural and educational material, such as the British Council, the British Library, the British Museum and the National Film and Television School [22] is one of the world’s leading providers of MOOCs.

FutureLearn believes that learning should be an enjoyable social experience. Their courses offer the opportunity to discuss what students are learning with others, which helps in making discoveries and developing new ideas. FutureLearns’ (2021) values are based on three pillars: learning everything, learning together, and learning with experts [22]:

*Learn anything:* Whether you want to advance your career or discover a new hobby, there is an online course for it. With online programs and degree programs, you can even expand your knowledge.

*Learn together:* Join millions of people from around the world who are learning together. Online learning is as easy and natural as chatting with a group of friends.

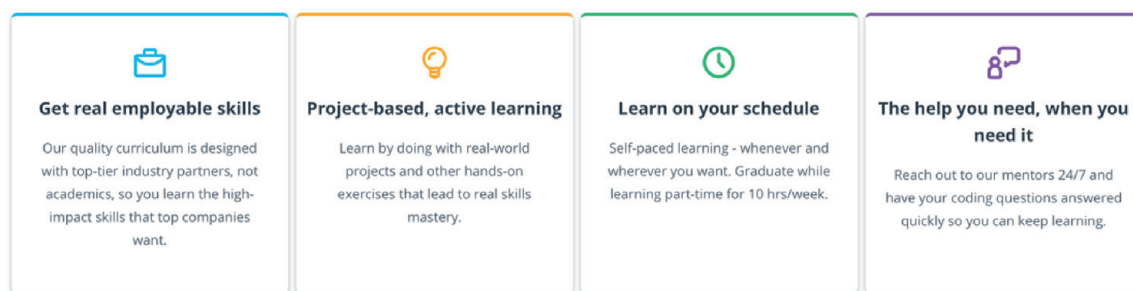
*Learn with experts:* Meet educators from top universities and cultural institutions.

### 3.4.4 SWAYAM

In 2014, the Ministry of Human Rights Development (MHRD) in India announced Study Webs of Active Learning for Young Aspiring Minds (SWAYAM) as the national platform for MOOCs under its National Mission on Education through Information and Communication Technology (NME-ICT) [23].

### 3.4.5 Udacity

In February 2012, Thrun founded the Udacity company, which began developing and offering MOOCs for free. Udacity is where lifelong learners come to learn



**Figure 6.**  
Udacity services and offers (see [24]).

the skills, they need to get the jobs they want and to build the lives they deserve. Udacity reaches out to individuals, governments, and businesses. Their mission is to train the world's workforce for the jobs of the future. They partner with leading tech companies to learn how technology is changing industries and to teach the critical technological skills that companies require in their workforce. Udacity's Nanodegree programs are developed in partnership with the world's most innovative tech companies and taught by industry leaders Udacity [24].

Udacity students are a community of global learners who share the common goals of progress and change. Their unique learning model allows for unprecedented levels of engagement with students, and students are accompanied through their learning journey from the first moment a member of the marketing team answers a question on Facebook to the penultimate moment when a member of the careers team receives news that a graduate has landed a new job. Udacity's mantra is "Students First," which is the guiding light as the company continues its mission to provide the highest quality learning possible for as many students as possible [24].

Udacity [24] has claimed that their powerful and flexible digital education platform can prepare even the hardest working learners to take on the most in-demand tech roles. They also have claimed that their active learning offerings have the critical factors required to deliver real results and teach real, employable skills that are project-based. Moreover, students can learn on their own schedules and get help whenever they need it, as shown in **Figure 6**.

### 3.5 UNESCO initiatives in open education

#### 3.5.1 UNESCO's SDGs

Every goal of the 2030 Agenda requires education to equip people with the knowledge, skills, and values they need to live with dignity, shape their lives and contribute to their societies [1, 10]. Education is both a human right and a force for sustainable development and peace.

The educational goals are stated in SDG 4 of the 2030 Agenda, which aims to ensure inclusive and equitable quality education by 2030 and promote lifelong learning opportunities for all. It requires political will, global and regional collaboration, and commitment from all governments, civil society, the private sector, youth, the UN, and other multilateral organizations to address education challenges and build systems that are inclusive, equitable, and relevant for all learners. Open education is probably the only way to achieve these goals. The first cMOOC was based on OER, which played a crucial role, as all the materials in the course were in the Creative Commons (CC). The MOOC movement and OER movement are related and strongly connected. The OER movement subsequently resulted in the UNESCO OER Recommendation in 2019 [9]. The UNESCO OER Recommendation outlined five areas of action:

(i) *building the capacity of stakeholders to create, access, re-use, adapt and redistribute OER*; (ii) *developing supportive policy for OER*; (iii) *encouraging inclusive and equitable quality OER*; (iv) *nurturing the creation of sustainability models for OER*; and (v) *promoting and reinforcing international cooperation in OER* [9, n.p.].

### 3.5.2 UNESCO's the futures of education: learning to become

In 2019, the International Commission on the Futures of Education was launched by UNESCO to reconsider how knowledge and learning could shape the future of humanity and the planet [2]. The Global Futures of Education initiative of UNESCO, Learning to Become, aims to rethink education and shape the future. The initiative, which involves broad public and professional engagement, aims to stimulate a global debate on how to reimagine knowledge, education, and learning in an increasingly complex, uncertain, and precarious world.

Although the Futures of Education initiative was animated by the recognition that the world's uncertainty, complexity, and fragility were rapidly increasing, it could not have foreseen the global health pandemic in only a few months, which was a reminder that dramatic changes can occur more suddenly and unexpectedly than anyone expects. On one hand, the pandemic has exposed many weaknesses and vulnerabilities, including increased inequalities, risks associated with the privatization of education, and the lack of preparation for the massive shift to digital and distance learning. On the other hand, some positive aspects have also become increasingly visible in society. It is evident that the answer to the challenges facing many societies involves solidarity and strong resilience. There is increased attention to the common good. The same is true of the ingenuity, commitment, and creativity of the many teachers, families, and students who have created remarkable learning experiences.

The pandemic has forced a massive shift away from learning and teaching in traditional settings that depend on physical interaction. The COVID-19 pandemic has compromised public education and increased the risk of fragmentation and disintegration. There has been an increased awareness of the multiple roles that schools play in addition to academic learning, such as child and adolescent well-being, health, and nutrition. The increased awareness and appreciation could serve as the basis for a new way forward in public education.

### 3.5.3 UNESCO: lifelong learning - a key competence

The Lifelong Learning Initiative of UNESCO [3, 4], which rethinks lifelong learning beyond the conceptual boundaries of education, emphasizes the possible reconnection of learning to larger social-emotional domains. This expands thinking about the "future of education" to include new perspectives on strategic areas such as the role of institutions, the use of technology, sources of knowledge and well-being, and people's access to learning and education.

Even in the richest economies, millions of people face financial and other barriers that exclude them from learning and prevent them from reaching their potential. The multidimensionality and complexity of the challenges people face require the implementation of a holistic vision and an ecosystem of lifelong learning. Moreover, the Fourth Industrial Revolution (4IR) combined with the dislocations caused by climate change, demographic change and the transformation of the labor market have implications for education. Therefore, the education policy agenda must prioritize lifelong learning beyond education and labor market policies [3, 4].

UNESCO has thus argued that the challenges facing humanity, not to mention those posed by the pandemic COVID-19 and the inequalities it exacerbates,



requires people who identify as learners throughout their lives, in a society that is a learning society. Achieving this requires a needs-based, learner-centered approach to education that empowers individuals of all ages and backgrounds to dynamically profile and use every learning process and its outcomes to reach their full potential, so that they can become what they want to become. Learning must be a collective process that recognizes the value of peer and intergenerational learning. This social-ethical dimension emphasizes learning to care for one another, foster diverse communities, and ensure the well-being of the planet. A collectively built global learning ecosystem should fluidly integrate formal, non-formal and informal learning, as well as different learning modalities, both online and offline. Such an ecosystem enables planned or spontaneous, individual, or collective learning in all domains throughout the life course and beyond. Legal foundations and mechanisms that recognize lifelong learning as a human right, social justice and liberation must not only ensure the recognition, validation and accreditation of learning outcomes acquired in different contexts. It also requires the democratization of the negotiation of individual and social emotions in learning. It builds on the free availability of educational resources as an 'educational commons' while strengthening learning opportunities through transformed educational institutions, reinvented (public) spaces for learning and revitalized learning in the workplace.

The UN Lifelong Learning Initiative is based on the argument that generating a global culture of lifelong learning is key to addressing the challenges fronting humanity, such as the climate crisis, technological and demographic change, the challenges posed by the pandemic COVID -19 and the inequalities it has exacerbated [3, 4]. Therefore, there is an urgent need to create a culture of lifelong learning. Ten action points are emphasized by UNESCO: (i) recognize the holistic character of lifelong learning; (ii) promote transdisciplinary research and inter-sectoral collaboration for lifelong learning; (iii) place vulnerable groups at the core of the lifelong learning policy agenda; (iv) establish lifelong learning and equitable access to learning technology for the common and the public good; (v) transform schools and universities into lifelong learning institutions, and transform pedagogies to be open to the community; (vi) recognize and promote the collective dimension of learning; (vii) encourage and support local lifelong learning initiatives, including learning cities; (ix) reengineer and revitalize workplace learning; and (x) recognize that lifelong learning is a human right.

Learning to learn thus represents a key competence in lifelong learning, and it is a prerequisite for acquiring and improving skills, knowledge, and attitudes. It is a key resource of personal development and active citizenship. It is seen as a skill that can be developed by all, which could ultimately promote the development of democracy. Briefly, learning to learn is defined as giving the learner responsibility for the activity of learning and orchestrating their own learning [3, 4].

Learning to learn concerns the ability to absorb and continue learning, to organize learning individually or collectively, and to make the best use of time, information, and learning opportunities. It includes the ability to set goals, identify the means of and obstacles to achieving these goals according to an individual learning strategy, and effectively monitor and evaluate one's learning process.

This competence means acquiring, processing, and assimilating new knowledge and skills, as well as seeking and using guidance. In learning to learn, the learner builds on previous learning and life experiences to use and apply knowledge and skills in a variety of contexts: personal, professional, and social. Identifying opportunities to increase one's motivation and confidence is critical to learning to learn. Learners and trainers function as motivators and facilitators of participants' learning in their educational work, with the aim of developing positive attitudes toward learning throughout the life course.



### 3.6 OECD

The OECD initiative The Future of Education and Skills 2030 [5] aims to help education systems determine the knowledge, skills, attitudes, and values that students need to succeed and shape their futures. The initiative aims to create a shared understanding of the knowledge, skills, attitudes, and values that learners will need in the 21st century [25, 26].

### 3.7 WEF

The World Economic Forum (WEF) is the International Organization for Public–Private Cooperation. The Forum brings together political, business, cultural, and other leaders in society to shape global, regional, and industrial agendas [27].

It is critical that individuals take an active attitude toward their own lifelong learning, according to Schwab, the founder, and Executive Chairman of WEF. The Future of Jobs 2018 report points out that businesses and governments need to dynamically encourage workforces to learn and develop skills. Artificial intelligence, robotization, and automation will create new jobs and wealth for millions of people. In addition, people worldwide will need to change, upskill, re-skill, and un-skill their work and careers during their lifespan, and throughout the transition. In all sectors the world needs people with talents and diversity in every way, but especially those who can offer a unique perspective. Fortunately, the digital world has given us new opportunities to reinvent ourselves, continue to learn, and be competitive. To take advantage of these opportunities and participate in the digital workplace, a lifelong learning plan is imperative.

## 4. Discussion

Quality education for all is a human right, and it aims at achieving social justice and liberation. All global organizations, such as the Commonwealth of Learning (COL), the European Commission (EC), OECD, UNESCO, and WEF, therefore have emphasized the urgent need to implement an open approach to education to achieve the global goals of quality education and the SDG 4 of accessibility, equity, equality, lifelong learning, inclusiveness, and democracy. During the COVID-19 pandemic, the education system was challenged, and the limitations became highly visible, especially the difficulties faced by vulnerable groups. Lifelong learning, equality, and liberation were key issues dealt with by societies to ease tensions between inside and outside organizations and enable boundaryless thinking and seamless learning [28]. Seamless learning involves the integration of learning experiences across different dimensions, including formal and informal learning contexts, individual and social learning, and the physical world and cyberspace.

During the pandemic, all MOOC providers confirmed the increased interest in MOOCs by both education institutions and users [7, 20–24]. There was a new peak in the MOOC year of 2020, which was called the second year of the MOOC field. The first one was in 2012. However, it was argued that MOOCs were limited because enrollment was low at about 10%. However, MOOCs are a different type of learning opportunity, and they are usually aimed at a very different audience: lifelong learners and learners who want to take control of and design their own learning journey [25, 26]. Most MOOC learners are self-directed learners [25, 26, 29, 30] and they often choose to learn through MOOCs for the joy of learning, up-skilling, or reskilling. Sometimes, learners just have the goal of networking in a rhizome way.

Rhizomatic learning, according to Gilles and Guattari [31–33], is a variety of pedagogical practices recently identified as a methodology for network-based education [33]. Rhizomatic theory emphasizes that learning is most effective when it allows learners to respond to evolving circumstances, fluidly and seemingly effortlessly, in a kind of serendipity. Cormier argued that in this way “the community is the curriculum” and the focus is on the flow and engagement of learners [32, 33].

It is crucial to understand this form of learning pathway, which can be formal, informal, and non-formal in nature. Furthermore, it is therefore crucial to understand the theories and practices of the theories that underlie MOOCs, as it has already become clear that the first MOOC, Siemens, and Downs’ cMOOC, was based on connectivism. Connectivism pedagogies, such as connectivism and rhizomatic learning, propose giving learners responsibility and agency in online learning ecologies so that they can tailor learning experiences to their learning needs using all means, including time, space, mode, path, and media. According to networked learning theories, networked online spaces provide multiple entry points [34–37], and learners in these spaces should take the lead in their own lifelong learning journey [25] and in learning from their experiences.

MOOC learners are usually self-directed. Self-directed learning builds on heutagogy [37]. Like connectivism and rhizomatic learning, self-directed learning is based on a networked theory of learning that promotes learner agency while further expanding other aspects of learning and the role of the learner as an agent of learning. The theory builds on established learner-centered learning theories, such as constructivism, humanism, reflection, and transformational learning [38]. Central to heutagogy is the concept of the learner as the primary agent in their learning [39]. The learner makes decisions about learning based on what is learned and how and whether and to what extent learning has been achieved (e.g., self-assessment). Also central to the theory are the following principles: (i) self-efficacy, which is the learner’s belief in their own abilities; and (ii) capability, which is the learner’s ability to demonstrate an acquired competency or skill in new and unique settings. The resulting experience of both has the potential to create transformative learning. In addition, reflection, and critical thinking about what has been learned and the learning process in the form of double-loop learning (metacognition) is another principle of heutagogy. Finally, self-directed learning is characterized by non-linear learning, in which the learning path is learner-driven and not predefined or sequential, as the learner determines what to learn and how to learn it. As a result, this path can often be chaotic and divergent, like learning in a connectivism and rhizomatic learning environment [39].

It is important to understand the role that MOOCs play in individual learning in terms of self-directed and rhizome learning pathways. This role is paramount in understanding the bigger picture of open learning, the role of MOOCs in this context, and how they contribute to the lifelong learning, equity, and liberation of individuals, communities, and societies.

## 5. Conclusion and recommendations

This chapter is based on the argument that knowledge is a universal entity and that it is constructed by individuals and belongs to anyone who asks for it wherever they need it. The theories of connected learning and learner-centered learning support the view that learning should be designed to enhance learners’ agency by harnessing and nurturing learners’ intrinsic motivation to learn. Learner agency through heutagogy and online learning ecologies provides sustainable learning experiences, as autonomy is given to the learner, which is highlighted in connectivism and rhizomatic learning. Rather than being constrained by predefined goals

or objectives, learning is defined by the needs of learners. It is meaningful if it meets these needs and involves learners in deciding what and how to learn. This approach, which is already characteristic of informal learning, can help establish learner agency as the standard for learning, develop learner self-efficacy and skills as a pathway to active, meaningful, and satisfying learning, and promote critical thinking and reflection in formal learning environments.

Before the advent of MOOCs and OER, quality education was a preserve of the privileged few. Therefore, the MOOC raise in 2012, the COVID-19 pandemic [40], and the UNESCO OER recommendation for implementation of its five areas have made a dramatic change in the educational landscape. The direction of education has shifted toward the fulfillment of human rights, quality education for all, equity, and liberation. Every person has the potential to create change, whether in their own lives, in their communities, or in the world. The transformative power of education can unlock this potential. In this regard, the UNESCO initiative on the future of learning, Learning to Become, is crucial in liberating learners to fulfill their self-goals and assume responsibility as global citizens. MOOCs play a critical role in this liberation because well-educated citizens are more likely to be healthy, responsible, and happy. Well-being and education are strongly linked, which the pandemic has demonstrated to the world.

MOOCs have the potential to help individuals enjoy learning, acquire knowledge in diverse ways, and be part of a learning society. In changing “learning landscapes” and the future of learning, MOOCs can play a variety of roles, such as stand-alone courses in informal and non-formal learning and as modules integrated into formal education. The advantages of MOOCs include the possibilities of upscaling and thus offering all global citizens high-quality learning opportunities [41–45]. In addition, the potential of micro-credentials is promising, which is another departure from the elitist education system that has been predominant for the past several centuries. It is time for agile, seamless, rhizomatic learning opportunities and a learning curriculum for individuals’ personal choices in the global learning landscape, which must be open to everyone across the globe to achieve lifelong learning, equity, and liberation. MOOCs can play a key role in the achievement of these goals.

## Conflict of interest

The authors declare no conflict of interest.

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